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( Reaffirmed 2003 )

# *Indian Standard*

# GUIDELINES FOR PRESENTATION OF INFORMATION IN TECHNICAL MANUALS

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*February* 1981

# *Indian Standard*

# GUIDELINES FOR PRESENTATION OF INFORMATION IN TECHNICAL MANUALS

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*Shri A. Dar was the Chairman at the meeting in which this document was finalized.

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# *Indian Standard*

# GUIDELINES FOR PRESENTATION OF INFORMATION IN TECHNICAL MANUALS

## 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 3 November 1980, after the draft finalized by the Publications and Graphic Technology Sectional Committee had been approved by the Executive Committee.

**0.2** A technical manual should communicate to the user in precise manner all the information required to enable him to get the best use from the product at the lowest maintenance cost. It should provide effective remedial measures with reference to some of the cost elements. For example: ( a ) effective operating instructions reduce unnecessary calls for maintenance, ( b ) preventive maintenance schedules reduce excessive wear and tear, ( c ) illustrated parts lists overcome the difficulty in spares identification and location, etc.

**0.3** A technical manual should contribute to the safety of personnel and to the maximum life and efficiency of an investment, whether this be building, plant or machinery.

**0.4** The text and illustrations in a manual should combine to assist installation, commissioning, operation and maintenance and facilitate repair and replacement of parts speedily and effectively without hazard and with minimum call on the user's labour force.

**0.5** A blend of presentation techniques-writting, illustrating and production should be used so as to make the communication process effective. The basic objective of making essential facts accessible in the shortest possible time may not be achieved unless all aspects of presentation are considered and the best solution to the user's needs identified.

**0.6** This may entail the development of different manuals for differing markets ( for example home and overseas ) and for different products. Not only many different languages give rise to changed presentation requirements but the operation needs and test/repair strategies may also be different. The manufacturer may adopt only such of the clauses of this standard to suit his specific requirements.

**0.7** In this context, it is important to identify a technical manual with the technical sales, servicing and product support activities of the manufacturer and with the test and repair strategies adopted for the product in a particular market. The servicing policy ( for example, determination of the levels at which user repair is allowed and at which manufacturer service is recommended ) will considerably affect the content and presentation.

**0.8** It is also important to consider the knowledge level of the user/maintainer and that no assumptions should be made of high skill or prior knowledge. When in selling in a variety of markets the product should be supported by a manual written for the lowest level of user skill.

**0.9** This draft Indian Standard is based on the publication 'Technical Manuals — A Guide to Users Requirements, 1974', published by the Institution of Plant Engineers, London. Substantial material has been drawn from the above publication and assistance derived is gratefully acknowledged.

**0.9.1** In the preparation of this standard considerable assistance has also been taken from the following:

BS 4884 : Part 1 : 1973 Specification for technical manuals: Part 1 Content. British Standards Institution.

BS 4884 : Part 2 : 1974 Specification for technical manuals: Part 2 Presentation. British Standards Institution.

BS 4940 : 1973 Recommendations for the presentation of technical information about products and services in the construction industry. British Standards Institution.

Guide for the preparation of maintenance and operation manuals for machine tools and accessories 1974. Central Machine Tool Institute, Bangalore.

## 1. SCOPE

**1.1** This standard provides guidelines for the preparation of a technical manual. It also includes instructions relating to publication of technical manuals.

**1.2** This guide will help the product manufacturer to communicate the required information in a clearly understood and logical manner.

## 2. TERMINOLOGY

**2.0** For the purpose of this standard, the following definitions shall apply.

**2.1 Technical Manual** — A technical manual conveys information to selected persons so that they may be appropriately instructed and/or informed regarding the installation, use, maintenance and repair of items of machinery or apparatus, or complete plant systems.

**2.2 Book** — A document which has covers and a spine ( *see also* IS : 2550-1963* ).

**2.3 Booklet** — A document which has covers but no spine.

**2.4 Pamphlet** — A sheet or sheets without covers or spine ( *see also* IS : 796-1966† ).

**2.5 Product** — Any material or item of any complexity ranging from raw material to a finished product or to a complete engineering system, which is offered for sale. The term includes services having no material content.

## 3. CONTENTS

**3.1** A technical manual may contain the following categories of information in the sequence as indicated. The purpose of each category of information is also given:

| *Category and Order* | *Purpose* |
|---|---|
| a ) Technical data ( specification ) | To define the purpose and performance of the product |
| b ) Operating information | To describe its use normally and in emergency |
| c ) Technical description | To describe the product and its functions |
| d ) Handling instructions | To detail effective and safe handling, transit, storage and installation procedures |
| e ) Maintenance instructions | To state the products maintenance requirements and facilitate cost-effective maintenance |

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*Glossary of classification terms.

†Glossary of cataloguing terms ( *first revision* ).

| *Category and Order* | *Purpose* |
|---|---|
| f ) Maintenance schedules | To assist with planned maintenance procedures |
| g ) Parts list | To facilitate accurate parts identification and location |
| h ) Modification details | To record changes and provide modification procedures |

**3.2 Technical Data** — The chapter on technical data should contain the following information:

a ) *Statistics*

1 ) Dimensions and weights ( SI units );

2 ) Supply requirements, services, foundations, etc;

3 ) Environmental considerations;

4 ) Physical handling and manning; and

5 ) Performance data.

b ) *Information Sources*

1 ) Specifications,

2 ) Reports and design disclosure documents ( *see* Note 1 ),

3 ) Drawings ( *see* Note 2 ) and schedules ( *see* Note 3 ),

4 ) Quality assurance documents, and

5 ) Any other instructions manual or publication.

NOTE 1 — Design disclosure documents range from designer's calculation sheets to sketches and design block diagrams.

NOTE 2 — Drawings are the official design drawings for manufacture.

NOTE 3 — Schedules are the lists of data, drawing numbers, equipment items and components which form part of the total package of design data from the designer. The schedules enable the technical writer to see the total picture of the system or product and to be sure he has knowledge and data of every part of it.

c ) *Hazards*

1 ) Standard safety notices,

2 ) Special hazard warnings, and

3 ) Antedotes or remedial precautions in case of hazards.

**3.2.1** *Summary of Contents*— This section under technical data should describe the purpose for which the product is intended, to enable the prospective user to assess its suitability for his requirements. Details of supply loadings and other services required together with foundation and mounting data should be adequate for pre-delivery planning purposes. All relevant hazards warnings, including any hazard notes, relation to the input materials ( if a manufacturing system or machine ) and to the output ( including effluent ) of the product, must be clearly stated. Where complex systems are being described, it may be advisable to abbreviate or limit this section in order to reduce the size of the manual. Reference should be made to a separate comprehensive specification as appropriate. Lists of information sources may be treated in a similar fashion.

**3.3 Operating Information** — The chapter on operating information should contain the following:

a ) Full description of operating modes and manpower requirements;

b ) Operating procedures ( normal and emergency for the various modes, with safety notes and hazard warnings; a clear distinction should be made between individual and team responsibilities;

c ) Operator fault diagnosis instructions, including detection and repair of malfunctions within the scope of the operator and reporting procedure for faults requiring supervisory or maintenance attention;

d ) Training programmes where drills or sequences have to be established before the product enters service or when new staff are introduced; and

e ) Special safety and environmental information such as injury or resuscitation procedures, product waste or effluent regulations.

**3.3.1** *Summary of Contents* — This section should contain complete operator information. It should be suitable for division into parts, appropriate for various levels of personnel ( supervisor, leading operator, operator etc ) and for use by the production department as a separate document; for example, training manual, operator manual, procedure card, etc. Descriptions of the various operating modes and manning requirements should be included. These may vary with:

a ) the method of control ( manual, auto, remote );

b ) the input material selected ( cut paper, paper roll, plastic );

c ) the end product ( printed boxes, die-cut boxes, etc );

d ) the operational state ( starting up, shutting down, cleaning, etc ); and

e ) the storage of in-progress material.

**3.3.1.1** Operating procedures for each mode should follow and, as far as possible, be complete without the need for cross-referencing to sections dealing with other modes. Emergency procedures must be clear and easily recognized and understood. Safety notes should always precede the relevant instructions thus:

‘ Open delivery chute selector ’
SAFETY NOTE ‘ Ensure all personnel clear of delivery area ’
‘ Press START button ’

**3.3.1.2** Capital letters should be used to denote legend actually appearing on the controls and the manual writer should inform the designer of any omissions or desirable changes to such legends.

**3.3.1.3** Operator fault diagnosis procedures should be included, preferably in flow chart form. These reduce unnecessary requests for maintenance services and facilitate diagnosis of faults, for example input material variations, which might otherwise be interpreted as product faults. The acceptable levels of fault diagnosis, adjustment and repair by the operator should be verified as the procedures are written. Procedures for monitoring and reporting failures which require skilled repair should be provided. This will ensure that maximum assistance is given to repair personnel by the operator reporting a fault.

**3.3.1.4** Training programmes, safety data and environmental information should be included as necessary.

**3.4** *Technical Description* — The chapter on ‘Technical Description’ should contain the following:

a ) Full technical details of products;

b ) Technical description of functional parts; and

c ) Technical description of supporting items ( power source, test gear, etc ).

**3.4.1** *Summary of Contents* — The technical description should be presented in logical order, from the highest level ( that is, outline of the complete system or machine ) down to the assembly, component or part level, consistent with the recommended repair policy ( this lowest level may vary for different markets and the supplier may omit technical descriptions at component level if maintenance by the user is not possible at this level ).

**3.5 Handling Instructions** — The chapter on ' Handling Instructions ' should contain the following:

a ) Handling, transportation and unpacking instructions;

b ) Installation and connection details;

c) Commissioning and proving procedures; and

d ) Relocation, storage and disposal instructions.

**3.6 Maintenance Instructions** — The chapter on ' Maintenance Instructions ' should contain full information on the following:

a ) Minor maintenance tasks ( such as calibration, adjustments, cleaning and minor repairs );

b ) Major maintenance tasks ( such as dismantling, overhaul, re-assembly, testing ); and

c ) Fault diagnosis routines and performance checks.

**3.6.1** *Summary of Contents* — Full instructions are required for maintenance. The information given should reflect the test and repair strategy to be adopted and should conform to the various levels at which servicing and repair work is to be executed. For example:

Level ( a ) Maintenance by the user's staff — full information given to user

Level ( b ) Maintenance by the supplier's staff — less information given to user

or

Level ( a ) Maintenance within the capability of the operator including adjustments, cleaning, minor repair, etc.

Level ( b ) Maintenance by the user's mobile personnel

Level ( c ) Maintenance by removal to a workshop

**3.6.1.1** In cases where maintenance and servicing policies are agreed between the user and the supplier adequate supporting information should be provided.

**3.6.1.2** Repair or corrective maintenance instructions are generally required in two parts, namely minor and major tasks as indicated in **3.6.** Where removal to workshop is envisaged, the instructions for removal, handling and return to service should be included.

**3.6.1.3** When the product is subjected to overhaul in which complete dismantling, repairs, re-assembly and test procedures are required, the information should be presented in a form suitable for use as a work instruction.

**3.6.1.4** Fault diagnosis routines should be included. Flow charts ( algorithms ) are recommended for establishing a strategic approach to diagnosis in a particular fault condition. Maintenance dependency charts or functional block diagrams with test data schedules are best used for detailed diagnosis at assembly or component level. These charts should be suitable for reproduction as separate documents designed for ease of use in the working environment.

NOTE 1 — All maintenance procedures should include instructions for testing and return to service.

NOTE 2 — All part names and numbers should conform to those used in the illustrated parts list.

**3.7** *Maintenance Schedules* — The chapter on ' Maintenance Schedules ' should contain the following:

a) Inspection schedules;
b) List of recommended lubricants;
c) Lubrication schedules;
d) Preventive maintenance procedures ( routine servicing ); and
e) Calibration, overhaul and repair schedules.

**3.7.1** *Summary of Contents* — Maintenance schedules are required for cleaning, lubrication, inspection, monitoring, preventive work, testing and replenishment. Detailed recommendations are necessary and should include the most suitable frequency of action. Each schedule should be complete in itself and not dependent upon reference to other parts of the manual, so that individual work instruction cards, etc, may readily be prepared for use in the maintenance department. Schedules should be adequately illustrated, provide the basis for a logical approach by the user and give step-by-step sequences. Details of special tools, test gear, test rigs and handling equipment should be supplied.

**3.7.1.1** Inspection schedules should recommend an inspection frequency based on the machine utilization factor, and not upon time periods, unless these can be directly related to running hours. Inspection periods should by synchronized with the lubrication schedules if possible, to assist the maintenance planner in the user's organization. If provisions are made for vibration or other forms of monitoring, these should be described and instructions given for use of the equipment and evaluation of readings.

**3.7.1.2** This section should contain a list of recommended lubricants and equivalents. Lubrication schedules indicating grades of lubricant, frequency of application, point of application and method of application are required, preferably based on illustrations. Capacities of sumps and other reservoirs should be indicated.

**3.7.1.3** Preventive maintenance procedures should be complete and fully illustrated to permit recognition of parts, test points, lubrication points, calibration points, etc. Preventive maintenance ( cleaning, minor adjustment, performance checks, etc ) performed by the operator shuld be included in the section 'Operating Information' ( *see* **3.3** ) and reference made to it in this section.

**3.7.1.4** Where the product is a materials processing machine or plant, calibratiron schedules should contain complete information for calibration in all working modes and for all grades of materials. The schedules should provide a basis for machine audits at periodic intervals or for setting to work after removal or major overhaul.

**3.7.1.5** Overhaul and repair schedules should indicate the various levels of repair and overhaul activity and the frequency at which overhaul action is required. Detailed and illustrated instructions are required. Complex work of a scheduled nature ( an annual overhaul with replacement of major parts ) requires work schedules, estimated times, handling instructions and if necessary, network plans. Testing and return to service procedures are essential for all tasks.

**3.7.1.6** Quality control in overhaul and repair work can be developed through the technical manual as follows:

a) Defining fits and tolerances clearly, with illustrations;
b) Providing effective testing procedures as indicated above; and
c) Defining parameters of replaceable items so that a meaningful evaluation of wear is possible.

NOTE — It is sometimes useful to indicate in the overhaul procedures when all wearing parts in an assembly ( these may be marked with* on a drawing ) should be replaced at the same time and the assembly tested and returned to service and the remaining parts evaluated for scrapping or for return to stock.

**3.8 Parts List** — The manufacturer should define the most economic parts replacement policy. Where a complete item by nature of its fabrication presents a difficult repair problem, this should be stated.

The component parts of an item should be quoted wherever possible and supported by suitable illustrations, such as exploded perspective drawings, to assist both with the identification of the parts and recognition of the way in which replacement or repair may be made. The parts list should be preceded by identification drawings of the plant layout and by essential general arrangement drawings to identify the equipment items in a system configuration, or the major assemblies in a machine or single equipment. The presentation of the parts list must follow this subdivision pattern: the parts for major items being listed and illustrated first, then parts for minor items and fiinally parts for the lowest order of subassembly or the smallest component groupings. The parts list should indicate the following:

a) Reference number of the item on the circuit diagram or exploded parts illustration;
b) Description of the item;
c) Supplier's reference number ( the part number );
d) Manufacturer ( if not the actual supplier );
e) Manufacturer's reference number;
f) Number of items per assembly; and
g) Recommended spare parts stock.

NOTE — When a part is not specially made by the supplier of the product, the original manufacturer's reference should be quoted in order to permit the user to manage his purchasing and stock holding effectively and rationalize his investment in spare parts.

**3.8.1** *Use of Illustrations* — All plant items, machines, products and assemblies should be illustrated suitably, preferably by exploded perspective drawings. These not only form the basis of the parts list but are also of great value in the maintenance department to support overhaul and repair work. The annotations on the drawings may be direct ( that is, part names or part numbers added directly to the drawings ) or indirect ( reference numbers added to the drawings which key the part to its place in the associated parts list ). The latter method is preferred because it is more flexible if changes are made and facilitates alignment of the numbers at the edge of the drawing for faster reading ( from the supplier's point of view, indirect annotations reduce the cost of incorporating translated part names when export versions of a manual are produced ).

**3.8.1.1** The parts list for a system or a complex equipment should be preceded by block diagrams, or general assembly drawings which are keyed to the parts list for the major items. Similar drawings may be necessary to facilitate identification of subunits or major assemblies within a major item. At the lowest level of detail and where individual components of an assembly are shown on an exploded drawing, it is useful to inset a small sketch showing the location of the assembly within the major unit of system.

**3.9 Modification Details** — Modifications to the product; prior to acceptance, including any made during commissioning (or as post commissioning work by user engineers) should be recorded to the standards of the presentation used in the rest of a manual. Amendments/replacement pages should be issued for all sections of a manual whenever necessary including operating procedures, illustrations, lists of parts, technical description and maintenance instructions. The use of loose-leaf manuals facilitates updating. Blank pages should be notes of modifications by the user and other comments on the subject or on the manual.

NOTE — All modifications sheets should carry the title and reference number of the manual so that the recipient is made aware of the loss of any amendments in a series. The date of issue should also be stated.

## 4. PRESENTATION AND STYLE

**4.1** The matter should be presented in an organized and consistent way to provide information which is technically accurate and easy-to-use. Information about related products should not be scattered into different sections but should be properly grouped. Frequently consulted data should be similarly located on the pages for each product. A clear statement 'limitations' and warnings/precautions should be given in appropriate sections or grouped under one heading to prevent any possible misuse of the machine.

**4.1.1** Wherever necessary, the relevant data should be supplemented by illustrations such as sketches, drawings, photographs, etc.

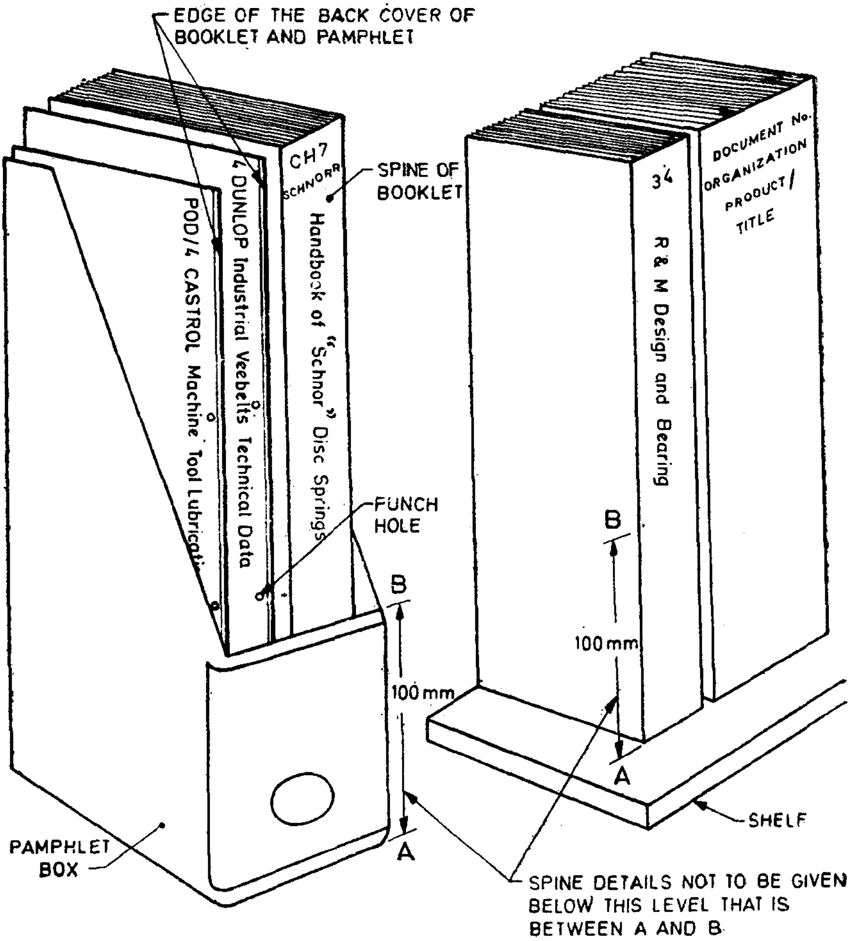
**4.1.2** The imperative form should be used for instructions and the active voice should be used for descriptive matter.

**4.1.3** The extent of information provided will depend on the nature of the product and the user's needs; some products will not require any supporting information, while others may require only some of the categories mentioned in **3.1**. Accordingly, the producer should select the type of the document (book or booklet, or pamphlet) whichever is appropriate to the product being described.

**4.2 Front Cover** — A front cover may be provided giving the following information on the front cover:

a) Reference number of the manual;
b) Model or type designation of subject; and
c) Title of the manual.

**4.2.1** *Reference Number of Manual* — A manual should be given a simple reference number for ease of identification. This number shall include series number, if any (for example: Catalogue: 2, Handbook: 2). In the case of catalogues in foreign languages, the symbol indicating the languages should be suffixed to the reference number ( for example: 216E where 'E' indicates English language ). The reference number shall be given on the front cover of books and booklets and on the first page of pamphlets. The reference number shall appear with title of the manual on the spine of books ( and binders/wrappers/jackets ) and the edge of the back cover of booklets ( *see* Fig. 1 ).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CH7
SCHNORR
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POD/4 CASTROL Machine Tool Lubricati
4 DUNLOP Industrial Veebelts Technical Data
Handbook of "Schnor" Disc Springs
FUNCH HOLE
B
100mm
A
PAMPHLET BOX
34
R & M Design and Bearing
DOCUMENT No. ORGANIZATION PRODUCT/ TITLE
B
100mm
A
SHELF
SPINE DETAILS NOT TO BE GIVEN BELOW THIS LEVEL THAT IS BETWEEN A AND B.

FIG. 1 DETAILS ON SPINE AND BACK COVER OF BOOKLET AND PAMPHLET

**4.2.2** *Date of Publication* — Wherever a title page is not included in the manual ( *see* **4.3** ), the month and year of publication shall be printed on the front cover, below the reference number. Wherever possible, the period of validity of the manual should be stated.

**4.2.3** *Information on Superseded Publication* — Information on supersession shall clearly be stated on the front cover.

**4.3 Title-Page** — The title-page shall include the following:

a) Reference number of the manual;

b) Model or type designation of subject;

c) Title of the manual;

d) Date of issue;

e) Issue number;

f) Name and address of manufacturer/supplier;

g) Name of publisher of manual [ if not the same as (f) ];

h) Name of author or editor, if desired; and

j) Copyright statement.

In the case of a pamphlet, title-page may not be necessary but the information may be given elsewhere.

**4.3.1** The following information, where applicable, may be given elsewhere in the manual:

a) Information for obtaining copies of the manual;

b) Any limitations ( for example, security ) on use of the manual;

c) Authority for publications ( if any );

d) Record of amendments;

e) Translation information ( that is, language versions available );

f) Notes on use of the manual ( for example, updating procedure);

g) Contents list;

h) List of useful works of reference and information sources;

j) List of supplementary or associated publications; and

k) Warnings, hazards, precautions, first aid, statutory notices, etc.

## 5. PRODUCTION

**5.1 Size** — The size of the document should be one of the sizes in A Series, preferably A4 (210 × 297 mm ), specified in IS: 1064-1980*. Any drawing bigger than A4 size may also be included after suitably folding to A4 size. Kinematic schemes, electrical or hydraulic circuits may be accommodated in A3 or A4 sheets.

**5.2 Quality of Paper** — The factors to be considered in the choice of the quality of paper shall include:

a) not so reflective/glossy as to cause discomfort in reading;

b) sufficiently opaque to prevent show-through;

c) the stability of the dimensions of nomographs, graphs or drawings from which measurements are to be taken;

d) the need to reproduce fine details; and

e) sufficient strength to withstand rough use at the shop floor.

### 5.3 Layout of a Page

**5.3.1** *Margin* — The back margin shall not be less than 25 mm ( 6 em ) for punching and binding for documents.

**5.3.1.1** Wherever a document is in the form of multi-folder (consisting of two or more larger sheets with many fold ), care should be taken to leave sufficient margin while printing the matter on each fold, so that when the whole document is folded the required space should be left along with the margin for punching holes.

**5.3.2** *Columns* — The text should usually be presented in a single column. In the case of bilingual documents, matter may appear in double column, simultaneously with common figures or illustrations, if any.

### 5.4 Reproduction

**5.4.1** The requirement of legibility should be considered in the choice of the reproduction process and the type face, inter-word spacing, line spacing and line length. Type size of less than 2·75 mm ( 8 point ) shall not be used. However, 3·5 mm ( 10 point ) and above are preferred for the text.

**5.4.2** *Variation in Type Face* — Varied type sizes and colours ( if required ) may be used to emphasize the structure of the document ( first,

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*Specification for paper sizes ( *second revision* ).

second, and third level headings) or to distinguish terms or units. Variation in type face should be kept to the minimum.

**5.5 Divider Leaves** — The divider leaves may be cards and/or printed in colour to focus attention. The utility of the divider leaves will be enhanced if they are shown by projecting tabs or thumbs or key board printing (mark on the edges of leaves which indicate where different sections are when the document is closed). The sequence of divider leaves should correspond with major headings in the main contents list.

**5.6 Pagination** — Pages should be numbered consecutively in international form of numerals. Manuals divided into parts may have the pages numbered separately for each part indicating both part and page number, for example ( 6 — 13 ) indicating Part 6, page 13.

### 5.7 Binding

**5.7.1** Any system of binding giving substantial or permanent anchorage down the left hand side of the document is acceptable, provided it allows the text to lie flat without damage to the spine. The use of loose leaf binders gives additional advantages ( *see* **3.9** ).

**5.7.2** Covers of loose leaf binders should be larger to accommodate pages.

**5.8 Spine** — If the thickness of the spine ( *see* Fig.1 ) is 15 mm or more the following information may be given:

a) Product classification;

b) Reference number of the manual, if applicable [*see* **4.2.1** and **4.3** (a) ], and

c) Name of the organization.

**5.8.1** Details on the spine should not be given up to 100 mm from the lower edge of a book.

**5.9 Wrapper/Jacket** — A wrapper or a jacket where provided, shall be such that it withstands rough handling at the shop and is not spoiled by greasy material.

( *Continued from page* 2 )

## Panel for Presentation of Information in Technical Manuals, EC 10 : P3

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